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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/756,451	01/08/2001	Christopher M. Edwards	60311A	5541

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THE DOW CHEMICAL COMPANY
INTELLECTUAL PROPERTY SECTION
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EXAMINER
FONTAINE, MONICA A

ART UNIT	PAPER NUMBER
1732	10

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/756,451	EDWARDS ET AL.	
	Examiner	Art Unit	
	Monica A Fontaine	1732	

-- Th MAILING DATE of this communication app ars on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-11 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-11 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This office action is in response to the Amendment filed 2 June 2003.

The following rejections have been overcome:

A. 35 USC 112 (2nd): Claims 4 and 11

The following rejections have been withdrawn, as necessitated by amendment:

A. 35 USC 102(b) as anticipated by Moyer (US 3993726)

B. 35 USC 103(a) over Moyer, in view of Demerest '228 (US 5614228): Claim 2

C. 35 USC 103(a) over Moyer, in view of Demerest '228, in further view of Long, Sr. (US 5798067): Claim 3

D. 35 USC 103(a) over Moyer, in view of Demerest '228, in further view of Bhattachayya et al. (US 5891379), hereafter "Bhattachayya": Claim 4

E. 35 USC 103(a) over Moyer, in view of Demerest '228, in further view of Manlove (US 6086800): Claim 5

F. 35 USC 103(a) over Moyer, in view of Demerest '228, in further view of Merrill et al. (US 6256146), hereafter "Merrill": Claims 6 and 7

G. 35 USC 103(a) over Moyer, in view of Demerest '228, in further view of Padovani (US 5591463): Claim 8

H. 35 USC 103(a) over Moyer, in view of Demerest '228, in further view of Park (US 4058581): Claims 9 and 10

I. 35 USC 103(a) over Moyer, in view of Demerest '228, in further view of

Murakami (US 5433419): Claim 11

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the part" in line 9. There is insufficient antecedent basis for this limitation in the claim. This should be changed to --the article--.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moyer (U.S. Patent 3,993,726), in view of Jacobson (U.S. Patent 5,266,021). Moyer shows the process as claimed including that which prepares a fiber-reinforced thermoplastic composite article comprising the steps of drawing a fiber bundle continuously through a melt obtained by heating a rigid thermoplastic resin (Column 2, lines 1-6), impregnating the drawn fiber bundle with a melted rigid thermoplastic resin to form a composite melt (Column 2, lines 7-8), drawing the

composite melt through a consolidation die to form a thermoplastic shaped article (Column 2, lines 8-16), thermoforming the shaped article on-line (Column 2, lines 16-17), and cooling the shaped article to solidify the thermoplastic resin (Column 2, lines 17-26). Moyer does not show forming an object with a varied cross-sectional shape along its length. Jacobson shows that it is known to carry out a molding process wherein by thermoforming the shaped article, the part is curved, twisted, or provided with a varied cross-sectional shape along its length (Figures 13A, 13B, 13C, 13D, 13E, 13F; Column 12, lines 47-53). Jacobson and Moyer are combinable because they are concerned with a similar technical field, namely, that of molding objects by extrusion followed by a forming operation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make Jacobson's object having varied cross-section shape with Moyer's process in order to form a desired article having desired cross-sectional area (see Moyer Column 4, lines 32-38).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moyer and Jacobson as applied to claim 1 above, and further in view of Demerest (U.S. Patent 5,614,228). Moyer shows the process as claimed as discussed above, but does not show the thermoplastic resin's glass transition temperature, hereafter "T_g." Demerest '228, hereafter "Demerest '228," shows that it is known for a thermoplastic resin useful in thermoforming operations to have a T_g not less than 50°C (Column 4, Table "Physical States of PET"). Moyer and Demerest '228 are combinable because they are concerned with a similar technical field, namely, that of thermoforming a material into various shaped articles. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a material with Demerest

'228's T_g in Moyer's thermoforming process in order to obtain a product with good dimensional stability.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moyer, Jacobson, and Demerest '228 as applied to claims 1 and 2 above, and further in view of Long, Sr. (U.S. Patent 5,798,067). Moyer shows the process as claimed as discussed above, but does not show the use of a rotary die during said thermoforming step. Long, Sr., hereafter "Long," shows that it is known for a composite material to be thermoformed using a rotary die (Column 2, lines 32-37). Moyer and Long are combinable because they are concerned with a similar technical field, namely, that of thermoforming a composite melt into various shaped articles. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Long's rotary die in Moyer's step of thermoforming a composite melt in order to capitalize on the advantages that are encountered when thermoforming with a rotary die.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moyer, Jacobson, and Demerest '228 as applied to claims 1 and 2 above, and further in view of Bhattachayya et al. (U.S. Patent 5,891,379). Moyer shows the process as claimed as discussed above, but does not show the use of moving rollers during said thermoforming step. Bhattachayya et al., hereafter "Bhattachayya," show that it is known for a composite material to be thermoformed by passing a shaped article through a pair of moving rollers that are oriented perpendicular to the direction of pultrusion (Column 3, 46-56). Bhattachayya and Moyer are combinable because they are concerned with a similar technical field, namely, that of thermoforming a composite melt into various shaped articles. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Bhattachayya's rollers in Moyer's step of thermoforming a

composite melt in order to capitalize on the advantages that are encountered when thermoforming with a roller apparatus.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moyer, Jacobson, and Demerest '228 as applied to claims 1 and 2 above, and further in view of Manlove (U.S. Patent 6,086,800). Moyer shows the process as claimed as discussed above, but does not show the use of a rotating die during said thermoforming step. Manlove shows that it is known for a composite material to be thermoformed by passing a shaped article through a rotating die (Column 4, lines 55-65). Manlove and Moyer are combinable because they are concerned with a similar technical field, namely, that of thermoforming a composite melt into various shaped articles. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Manlove's rotating die in Moyer's step of thermoforming a composite melt in order to capitalize on the advantages that are encountered when thermoforming with a rotating die apparatus.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moyer, Jacobson, and Demerest '228 as applied to claims 1 and 2 above, and further in view of Merrill et al. (U.S. Patent 6,256,146). Regarding Claim 6, Moyer show the process as claimed as discussed above, but does not show hauling off one side of a shaped article at a faster rate than another side. Merrill et al., herafter "Merrill," show that it is known to haul off one side of a shaped article at a faster rate than another side (Column 3,lines 15-19, 23-27; Column 34, lines 30-36). The examiner notes that although Merrill does not explicitly use the phraseology of the claim, for example "hauling," during thermoforming, deformation of a nonuniform nature takes place in the reference, and uneven pulling of the article would be a likely to process by which to

achieve nonuniform deformation. Merrill and Moyer are combinable because they are concerned with a similar field, namely, that of post-forming/thermoforming polymeric materials into various shaped articles. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Merrill's uneven hauling of a shaped article in Moyer's step of thermoforming a composite melt in order to capitalize on the advantages that are encountered when thermoforming when hauling off a product at different rates. Regarding Claim 7, Moyer shows the process as claimed as discussed above, but does not show forming a curved composite during the thermoforming process. Merrill shows that it is known to mold a composite material into a curved article during thermoforming (Column 34, lines 30-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to mold a curved article, as in Merrill, in Moyer's composite melt thermoforming process in order to produce a curved article.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moyer, Jacobson, and Demerest '228 as applied to claims 1 and 2 above, and further in view of Padovani (U.S. Patent 5,591,463). Moyer shows the process as claimed as discussed above, but does not show the use of winding a shaped article on a mandrel during said thermoforming step. Padovani shows that it is known for a thermoplastic material to be thermoformed by winding it around a mandrel (Column 9, lines 31-39). Padovani and Moyer are combinable because they are concerned with a similar technical field, namely, that of thermoforming a thermoplastic sheet into various shaped articles. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Padovani's mandrel in Moyer's step of thermoforming a

composite melt in order to obtain a product with characteristics of a composite mixture and to capitalize on the advantages that are encountered when thermoforming with a mandrel.

Claim 9-11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moyer, Jacobson, and Demerest '228 as applied to claims 1 and 2 above, and further in view of Murakami (U.S. Patent 5,433,419). Moyer shows the process as claimed as discussed above, but does not require more than one thermoplastic resins. Regarding Claim 9, Murakami shows that it is known to carry out a forming method using thermoplastic polyurethane (Column 3, lines 56-63). Murakami and Moyer are combinable because they are concerned with a similar technical field, namely, that of thermoforming a composite melt into various shaped articles. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Murakami's resin in Moyer's step of thermoforming in order to obtain a product with desired physical characteristics of molded polyurethane. Regarding Claim 10, Murakami shows that it is known to carry out a forming method using reinforcing fibers of glass (Column 3, lines 44-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Murakami's glass reinforcing fibers in Moyer's step of thermoforming in order to obtain a product with desired physical characteristics of glass-filled resin. Regarding Claim 11, Murakami shows that it is known to carry out a forming method using a blend of polyurethane and polypropylene (Column 3, lines 56-66; Column 6, lines 56-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Murakami's blend of materials in Moyer's thermoforming process in order to obtain a product with desired physical characteristics of the specific combination of resins.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2 and 9 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 5,891,560 in view of Jacobson (U.S. Patent 5,266,021). Although the conflicting claims are not identical, they are not patentably distinct from each other because Jacobson shows that it would have been obvious to form composite articles having differently-shaped cross-sections by drawing fibers through a melt to form the composite material in the same way as '560's claim 1.

Claim 3 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 5,891,560 in view of Jacobson, in further view of Long, Sr. (U.S. Patent 5,798,067). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Long's rotary die in '560's step of forming a composite melt in order to capitalize on the advantages that are encountered when thermoforming with a rotary die

Claim 4 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 5,891,560 in view of Jacobson, in further view of Bhattachayya (U.S. Patent 5,891,379. It would have been obvious to one of ordinary skill in the art at the time the invention was made to Bhattachayya's rollers in '560's step of forming a composite melt in order to capitalize on the advantages that are encountered when thermoforming with a roller apparatus.

Claim 5 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 5,891,560 in view of Jacobson, in further view of Manlove (U.S. Patent 6,086,800). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Manlove's rotating die in '560's step of forming a composite melt in order to capitalize on the advantages that are encountered when thermoforming with a rotating die apparatus.

Claims 6 and 7 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 5,891,560 in view of Jacobson, in further view of Merrill (U.S Patent 6,256,146). Regarding Claim 6, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Merrill's uneven hauling of a shaped article in '560's step of forming a composite melt in order to capitalize on the advantages that are encountered when thermoforming when hauling off a product at different rates. Regarding Claim 7, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mold a curved article, as in Merrill, in '560's composite melt forming process in order to produce a curved article.

Claim 8 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 5,891,560 in view of Jacobson, in further view of Padovani (U.S. Patent 5,591,463). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Padovani's mandrel in '560's step of forming a composite melt in order to obtain a product with characteristics of a composite mixture and to capitalize on the advantages that are encountered when thermoforming with a mandrel.

Claims 10 and 11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 5,891,560 in view of Jacobson, in further view of Murakami (U.S. Patent 5,433,419). Regarding Claim 10, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Murakami's glass reinforcing fibers in order to obtain a product with characteristics of glass-filled resin. Regarding Claim 11, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Murakami's blend of materials in '560's forming process in order to obtain a product with desired physical characteristics of the specific combination of resins.

Response to Arguments

Applicant's arguments filed 2 June 2003 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claims 1, 4, 6, 7, and 9-11 have been considered but are moot in view of the new ground(s) of rejection.

Regarding Claim 2, applicants contend that the Demerest '228 document, when combined with Moyer, does not teach the claimed invention because PET is not depolymerizable and repolymerizable. This argument is not deemed persuasive because Demerest '228 shows depolymerization (Column 5, lines 17-20, 46-56) and repolymerization (Column 6, lines 32-63). Demerest '228 recites a method for an in-line forming process, and can therefore be combined with Moyer.

Regarding Claim 3, applicants conted that the Long document, when combined with Moyer and Demerest '228, does not teach the claimed invention because he does not show a process which thermoforms thermoplastic articles. This argument is not deemed persuasive because Long teaches shaping thermoplastic articles (Column 2, lines 23-37).

Regarding Claim 5, applicants contend that the Bhattachayya document, when combined with Moyer and Demerest '228, does not teach the claimed invention because he does not teach a continuous pultrusion process. This argument is not deemed persuasive because Bhattachayya shows a pultrusion method having consecutive, progressive steps (Column 1, lines 56-65; Column 2, line 38 - Column 3, lines 1-5, 51-55).

Regarding Claim 8, applicants contend that the Padovani document, when combined with Moyer and Demerest '228, does not teach the claimed invention because he does not show a continuous fiber pultrusion process. This argument is not deemed persuasive because Padovani shows a method for an in-line forming process, and can therefore be combined with Moyer to show a continuous fiber pultrusion process.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with regard to thermoforming processes in general:

U.S. Patent 5,601,679 to Mulcahy et al.

U.S. Patent 5,987,838 to Beck

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica A Fontaine whose telephone number is 703-305-7239. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill L. Heitbrink can be reached on 703-308-0673. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9310 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

maf
July 24, 2003

JILL L. HEITBRINK
PRIMARY EXAMINER
ART UNIT ~~137~~ 1732
7/24/03